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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,224	01/17/2002	Mingo Liu	67,200-629	3571
7590 03/03/2004 TUNG & ASSOCIATES Suite 120 838 W. Long Lake Road Bloomfield Hills, MI 48302			EXAMINER NGUYEN, KHIEM D	
			ART UNIT 2823	PAPER NUMBER

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/053,224

Applicant(s) **X**

LIU ET AL.

Examiner

Khiem D Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 25-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-29 is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-12 and 25 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

Applicant's arguments filed December 10th, 2003 have been fully considered but they are not persuasive.

The Rejection from paper No. 3 sent September 8th, 2003 is incorporated in this paper. It is presented here for convenience.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-5 and 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by

Givargizov et al. (U.S. Patent 6,458,206).

In re claim 1, Givargigov discloses a method for forming a micro tip for a micro probe utilized in testing semiconductor integrated circuit devices, the method comprising the steps of (FIGS. 4A-E and related text): depositing a thick oxide layer (FIG. 4A, 104) upon a substrate (FIG. 4A, 102), wherein a thickness of the thick oxide layer is thick with respect to a thickness of the substrate; and defining a micro tip (FIG. 4E, 120) for a microprobe from the thick oxide layer upon the substrate through plurality of subsequent semiconductor manufacturing operations performed upon the substrate and layers thereof,

wherein a plurality the micro tips are mass produceable and can be efficiently utilized association with increasingly smaller sizes of semiconductor integrated circuit devices (col. 3, line 10 to col. 5, line 5 and **FIGS. 4A-E**).

In re claim 2, **Givargigov** discloses the step of adapting the micro tip of the microprobe for use with a micromachine (Abstract).

In re claim 3, **Givargigov** discloses the step of connecting the micro tip of the microprobe to a micromachine (col. 6, lines 31-60 and **FIG. 15**).

In re claim 4, **Givargigov** discloses the step of defining the micro tip of the microprobe utilizing a plurality of micromachine manufacturing operations (col. 3, line 10 to col. 5, line 5 and **FIGS. 4A-E**).

In re claim 5, **Givargigov** discloses the step of performing a first lithography operation upon the substrate (**FIG. 4A, 102**) and layers thereof following a deposition of the thick oxide layer (**FIG. 4A, 104**) upon the substrate.

In re claim 10, **Givargigov** discloses the step forming the micro tip (**FIG. 4E, 120**) for the micro probe on a substrate, wherein the micro tip is formed between a conductive metal layer and the substrate (**FIGS. 4A-E**).

In re claim 11, **Givargigov** discloses depositing a conductive metal layer (**FIG. 4D, 124**) on top of the oxide layer (**FIG. 4D, 104**). Thus, Givargigov inherently discloses wherein the conductive metal layer may comprise an aluminum layer.

In re claim 12, **Givargigov** discloses wherein the substrate (**FIG. 4A, 102**) comprises a silicon substrate (col. 3, lines 33-40).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-7 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Givargizov et al. (U.S. Patent 6,458,206) as applied to claim 1-5 and 10-12 above, and further in view of Stanley Wolf (Silicon Processing for the VLSI Era, Volume 1).

In re claims 6 and 7, Givargigov fails to explicitly disclose performing a first metal sputter operation upon the substrate, following the first lithography operation performed upon the substrate and the layers thereof and performing a chemical mechanical polishing operation upon the substrate and the layers thereof following the first metal sputter operation performed upon the substrate.

Wolf discloses performing a first metal sputter operation upon the substrate, following the first lithography operation performed upon the substrate and the layers thereof (page 335) and performing a chemical mechanical polishing (CMP) operation upon the substrate and the layers thereof following the first metal sputter operation performed upon the substrate (pages 238-239). It would have been obvious to one of ordinary skill in the art of making semiconductor devices to combine the teaching of Givargigov and Wolf to enable the first metal sputter operation and a chemical mechanical polishing operation upon the substrate of Givargigov to be performed and furthermore to simplify the problem of depositing films with uniform thickness over large

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wafers (page 335) and to prevent mechanical work damage from remaining on the polished film (page 238).

In re claim 25, there is no evidence indicating the thickness range of the thick oxide layer is critical and it has been held that it is not inventive to discover the optimum or workable range of a result-effective variable within given prior art conditions by routine experimentation. See MPEP § 2144.05. Note that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising there from. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Allowable Subject Matter

Claims 26-29 allowed.

Claims 8-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Amendment

Response to Applicant's Arguments

Applicant's arguments filed December 10th, 2003 have been fully considered but they are not persuasive.

In response to Applicant's argument that the text of Givargizov does not indicate that reference numeral refers to a "thick" oxide layer, wherein a thickness of the thick

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oxide layer is thick with respect to a thickness of the substrate, examiner respectfully disagree. Note that, there is no evidence indicating the thickness range of the thick oxide layer is critical and it has been held that it is not inventive to discover the optimum or workable range of a result-effective variable within given prior art conditions by routine experimentation. See MPEP § 2144.05. Note that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising there from. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

For this reason, examiner holds the rejection proper.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khiem D Nguyen whose telephone number is (571) 272-1865. The examiner can normally be reached on Monday-Friday (8:00 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (571) 272-1855. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.N.
February 6, 2004

A handwritten signature in black ink, consisting of a stylized 'W' followed by a large loop and a horizontal line extending to the right.

**W. DAVID COLEMAN
PRIMARY EXAMINER**